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AUTHORITY

usaf ltr, 25 jan 1972

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TR 70-14

AD 868851

TECHNICAL REPORT NO. 70-14

OPERATION AND CLOSE-OUT OF THE
UINTA BASIN SEISMOLOGICAL OBSERVATORY
Quarterly Report No. 4, Project VT/9703
Contract F33657-69-C-0759
1 January through 31 March 1970

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GEOTECH

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TECHNICAL REPORT NO. 70-14

OPERATION AND CLOSE-OUT OF THE
UINTA BASIN SEISMOLOGICAL OBSERVATORY
Quarterly Report No. 4, Project VT/9703
Contract F33657-69-C-0759
1 January through 31 March 1970

Sponsored by

Advanced Research Projects Agency
Nuclear Test Detection Office
ARPA Order No. 624

TELEDYNE GEOTECH
3401 Shiloh Road
Garland, Texas

23 April 1970

IDENTIFICATION

AFTAC Project No:	VELA T/9703
Project Title:	Operation of UBSO
ARPA Order No:	624
ARPA Program Code No.	8F10
Name of Contractor:	Teledyne Industries, Geotech Division Garland, Texas
Date of Contract:	1 January 1969
Amount of Contract:	\$294,528
Contract No:	F33657-69-C-0759
Contract Expiration Date:	31 December 1969
Program Manager:	B. B. Leichliter, 271-2561, ext. 222

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ABSTRACT

This report describes the close-out work at the Uinta Basin Seismological Observatory (UBSO) from 1 January through 31 March 1970. Operations were terminated on 31 December 1969, and preparations are underway to transfer the observatory, along with equipment for a basic operation, to the National Science Foundation. Close-out operations include picking up and shipping the equipment, closing out telephone and power services, transferring personnel, and clearing the area for return to the Bureau of Land Management and others.

On 26 January, the Project Officer notified us that ARPA had decided to transfer UBSO to the National Science Foundation for subsequent operation by Dr. Kenneth Cook of the University of Utah.

We were requested to review ASD's letter of 9 January, which directed shipment of long-period system components to Dr. Pomeroy of the University of Michigan and Mr. Peter Ward of Columbia University. We were told to retain at UBSO enough long-period equipment for a basic three-component long-period system, and to ship the other long-period equipment as directed.

On 9 February, the long-period equipment for the University of Michigan and Columbia University was shipped by motor freight on GBL's. Copies of the DD 1149 forms were prepared and distributed.

With its letter dated 12 March, ASD included the revised shipping instructions for the UBSO equipment. Copies of the letter and the shipping instructions are included in appendix 1. Most of the equipment designated for shipment was gone by 31 March; the remainder is to be shipped the first week of April.

2.3 TERMINATION OF TELEPHONE AND POWER SERVICE

The Mountain States Telephone Company terminated operation of the telephone links for the long-period array on 1 January, and picked up the teletype machine and the data sets on 9 January.

After all equipment had been removed from the long-period vaults, a formal letter to the power company requested termination of power services to those vaults.

Financial obligations to the telephone and power companies were met during the reporting period.

2.4 TRANSFER OF PERSONNEL

The UBSO staff under the operations contract consisted of seven people. In January, one person was transferred and one was terminated. One person was transferred in each of February and March. At the close of the reporting period, the station manager and two other people were at UBSO. The station manager will remain until UBSO and its inventory are turned over to the National Science Foundation. The other two people have resigned effective 17 April and plan to accept employment with the University of Utah for their operation of the observatory.

2.5 CLEAR AREA FOR RETURN TO BLM AND OTHERS

Equipment has been contracted for use in closing the six outlying long-period vaults, commencing the first week of April. If weather permits, closing the vaults and re-seeding the areas will be completed by 17 April. We advised the local BLM representative of the vault closing and re-seeding work, and have asked him to inspect each site after closing.

2.6 TRANSFER TO NATIONAL SCIENCE FOUNDATION

On 30 March, we called Mr. William Cole of the Grants and Contracts Office, National Science Foundation, 1800 G Street NW, Washington, D. C. 20550, to discuss transfer of UBSO and its inventory. We agreed to send Mr. Cole a copy of the UBSO inventory that will be turned over to the National Science Foundation. After he receives the list, Mr. Cole, or a representative of his office, will visit UBSO and check the inventory with Mr. Frank Seymour, Station Manager, before acceptance. We hope the transfer can be made before the end of April.

We also reviewed with Mr. Cole the return of the acreage to BLM so that the National Science Foundation can obtain the area. As requested, we notified the Project Officer of the discussion with Mr. Cole. The Project Officer indicated that he would call the National Science Foundation.

APPENDIX 1 to TECHNICAL REPORT NO. 70-14

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433



REPLY TO
ATTN OF ASWKS (T. Kain/52554)

12 Mar 1970

SUBJECT RFQ F33657-70-Q-0543, UBSO Roll-Up Project VT/9703

to Teledyne Ind., Inc.
Geotech Division
P. O. Box 28277
Dallas, TX 75228

56793

MAR 16 1970

1. The primary purpose of this letter is to provide a statement of work (Attachment 1) to be incorporated in any resultant supplemental agreement for the roll-up of UBSO as quoted in your proposal P1-1502 dated 12 February 1970.
2. Attachment 2 provides a list of equipment to be shipped from UBSO and the addresses of the recipients. All other equipment and facilities are to remain at UBSO and be transferred to the National Science Foundation (NSF). Two contacts within the NSF are: Mr. Wilbur W. Bolton, Jr., Grants and Contracts Officer, telephone 202-632-5772; and Mr. William Cole, telephone 202-632-5884. Both men work in the Grants and Contracts Office, National Science Foundation, 1800 G Street, NW, Washington DC 20550.
3. Request written confirmation by 16 March 1970 that there are no discrepancies in the directions provided by the Air Force.

Thomas B. Kain
THOMAS B. KAIN
Contracting Officer

Cy to: DCASR Dallas (DCRT-COG-16H)

2 Atchs

1. Revised Stmt of Wk to be Done, P/A VT/9703, Closing of UBSO
2. Distribution of Excess Property at UBSO, Project VT/9703, Atch 2

3-16-70

ACTION:	<i>2. H. Dinning</i>
INFO:	

10 Mar 70

Revised Statement of Work to be Done
P/A VT/9703, Closing of UBSO

1. Rehabilitation and Coordination of Return of Land to Proper Parties.

a. There are leases on two tracts of land used for remote long-period instrument sites. These sites each contain a small steel pit which must be filled. The leases can be terminated upon removal of equipment from the sites and completion of rehabilitation.

(1) Tract SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 25, 12S, R1E, Uinta Special Survey, belongs to the Ute Indian Tribe, Fort Duchesne, Utah.

(2) Tract SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 32 and NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 32, 13S, R22E, Salt Lake Base and Meridian, belongs to the State of Utah, State Land Board, State Capitol Building, Salt Lake City, Utah 84114.

b. All other land used for remote long-period instrument sites is under the jurisdiction of the Bureau of Land Management (BLM), Utah Land Office, Federal Building, Salt Lake City, Utah 84111. This land can be returned to BLM accountability following removal of equipment at the sites and rehabilitation pursuant to Federal Regulations, Title 43, Public Lands Interior. These tracts are identified in Public

Land Order No. 4651, 18 Apr 1969, and consist of the following, with respect to the Salt Lake Meridian:

(1) N $\frac{1}{2}$ of Lot 1, Sec 13, T4S, R19E.

(2) SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 9, T8S, R20E.

(3) NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 35, T7S, R22E.

(4) NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 26, T5S, R23E.

c. The steel pits at each site can be filled with dirt and cable, and the lids removed and disposed of.

d. The lands withdrawn have not been contaminated by chemical, biological, or radiological materials; therefore, there is no need for decontamination. The character of the land has not been changed except for the construction of access roads and trails. These are to be reseeded using ten pounds of Sodar Wheatgrass per acre as recommended by the Vernal District Office of the BLM.

- e. There is no intention of abandoning any improvements on the land.
- f. No easements or other rights covering this land have been granted by the Air Force.

2. Equipment Pickup, Packing, Shipment, and Transferral.

a. The equipment associated with the six remote long-period instrument sites, consisting of 3-component long-period seismometers, their associated amplifiers, and digital field systems, is to be retrieved from the field. The instrumentation at the observatory associated with this equipment is to be dismantled in preparation for shipment.

b. The equipment not required for recording of long-period data from the central site using a standard analog recorder (i.e., develocorder, helicorder, etc) is to be picked up.

c. All equipment not being left as part of a basic UBSO is to be packed and shipped as directed by the Government. The transfer of accountability for this equipment will be coordinated with the proper authorities.

3. Utility Close-Out. The necessary arrangements are to be made to provide for close-out of telephone and commercial power services associated with installation of the long-period array.

4. Personnel Transfer. Provisions are to be made to transfer or terminate the UBSO personnel in a timely manner consistent with the work which is to be done at the observatory.

Attachment 2

Distribution of Excess Property at UBSO, Project VT/9703

<u>Item</u>	<u>Manufacturer</u>	<u>Model No</u>	<u>Quan</u>	<u>Recipient</u>
Amplifier, different	Tektronix	2A63	1	VT/0704
Amplifier, filter	Geotech	11982	1	VT/8706
Amplifier, filter	Geotech	12020	1	VT/8706
Amplifier, helicorder	Geotech	4983	3	VT/0704
Amplifier, PTA	Geotech	12613	2	T/0102
Amplifier, PTA, SP	Geotech	4300	5	AFOSR(a)
Amplifier, PTA, SP	Geotech	4300	2	AFOSR(b)
Amplifier, PTA, SP	Geotech	4300	4	AFOSR(c)
Amplifier, SS, LP	Geotech	28450	24	VT/0703
Amplifier, pre-	Tektronix	3A74	1	VT/0704
Assembly, junction	Geotech	14415	19	AFTAC
Base, time	Tektronix	2B67	1	VT/0704
Base, time	Tektronix	3B3	1	VT/0704
Calibrator, microbarograph	Geotech	19403	1	VT/8706
Cell, load	Bowen	14153	1	USGS(b)
Console, develocorder	Geotech	6484A	2	AFTAC
Degausser, Tape	Ampex	111	1	VT/8706
Degausser, Tape	Ampex	111	1	VT/8707
Degausser, Tape	Ampex	111	1	AFOSR(c)
Develocorder	Geotech	4000	2*	VT/0703
Develocorder	Geotech	4000	1	VT/8706
Develocorder	Geotech	4000	2	USGS(a)
Develocorder	Geotech	4000-C	1	AEC/NVOO(a)
Discriminator, FM	Geotech	10821	1	VT/8706
Discriminator, FM	Geotech	15216	2	VT/8706
Distributor, power	Geotech	12322	1	VT/8706
Filter, var bandpass	Krohn-Hite	330A	1	AFCRL
Filter, var bandpass	Krohn-Hite	330AR	1	AFCRL
Galvanometer	Geotech	8530	1	VT/0704
Generator, function	Hew-Pack	202A	1	VT/0704
Generator, power	Sears	5803125-45	1	VT/8707
Generator, thermoelectric	3M	520	1	VT/0703
Head, mag tape playback	Minn-Hon	755722024	2	VT/9706
Head, mag tape playback	Minn-Hon	1707GXPF	2	VT/9706
Head, mag tape playback	Minn-Hon	755722018	2	VT/9706
Helicorder	Geotech	2484	3	VT/0704
Indicator, weight	Bowen	14150	1	USGS(b)
Meter, DC, MCRV-AM	Hew-Pack	425A	1	VT/0703
Meter, freq	Gen Radio	1142-A	1	VT/0704
Meter, gauss	Emp Sci	900	1	VT/8707

<u>Item</u>	<u>Manufacturer</u>	<u>Model No.</u>	<u>Quan</u>	<u>Recipient</u>
Meter, gauss	Emp Sci	D874	1	VT/8706
Meter, VOM	Triplett	630	1	VT/0704
Meter, VOM	Triplett	630A	3	VT/0704
Module, amplifier, SCC	Geotech	23403	3	VT/0703
Module, summation	Geotech	23404	1	AFTAC
Neck, goose	Schlumberger	H-15373	1	USGS (b)
Oscillator	Geotech	10380	1	VT/8706
Oscillator, wide range	Hew-Pack	200CD	1	VT/0704
Oscilloscope	Jetronic	05-8C/U	1	AEC/NVOO (a)
Oscilloscope	Hew-Pack	120AR	1	AFTAC
Oscilloscope	Tektronix	502	1	VT/0704
Oscilloscope	Tektronix	503	1	VT/0703
Oscilloscope	Tektronix	503	1**	AFOSR (b)
Oscilloscope	Tektronix	RM561A	1	VT/0704
Processor, dig filter	Tex Inst	563991	1	VT/0704
Processor, dig filter, aux	Tex Inst	580600	1	VT/0704
Processor, multiple array (10-channel, Ser No 1)	Tex Inst	-	1	excess
Processor, multiple array (19-channel, Ser No 2)	Tex Inst	-	1	AFCRL
Protector, station	Geotech	7148	4	AFOSR (b)
Protector, station	Geotech	8399	2	AFOSR (b)
Receiver, radio	Spec Prod	WVTR	1	VT/0703
Recorder, mag tape	Honeywell	LAR-7300	2	AFCRL
Recorder, mag tape	Honeywell	7400	1	VT/0704
Recorder, mag tape	Ampex	GE0300	1	VT/0703
Recorder, mag tape +CC	Kennedy	DS-370-R5	1	VT/0704
Recorder, paper chart	Sanborn	299	1	VT/0703
Regulator, voltage	Wanlass	RF1330	1	AEC/NVOO (b)
Seismometer, J-M, SP, V	Geotech	648C	5	AFOSR (a)
Seismometer, J-M, SP, V	Geotech	6480	2	AFOSR (b)
Seismometer, J-M, SP, V	Geotech	6480	4	AFOSR (d)
Seismometer, LP, H	Geotech	8700	10	AFOSR (c)
Seismometer, LP, H	Geotech	8700	10	AFOSR (c)
Seismometer, LP, V	Geotech	7505A	4	AFOSR (c)
Seismometer, LP, V	Geotech	7505A	4	AFOSR (e)
Station, dig field	Geotech	30620	3	VT/0704
Supply, power	Geotech	14486	1	VT/8706
Supply, power	Lambda	C281M	1	VT/8706
Supply, power	Lambda	LMP6	2	AFCRL
Supply, power	Philbrick	PR30C	1	VT/0703
Supply, power	Philbrick	R30C	1	VT/0703
Supply, power, PTA	Geotech	4304	10	AFOSR (a)
Supply, power, PTA	Geotech	4304	4	AFOSR (b)
Supply, power, PTA	Geotech	4304	10	AFOSR (c)

<u>Item</u>	<u>Manufacturer</u>	<u>Model No</u>	<u>Quan</u>	<u>Recipient</u>
System, central dig	Geotech	30630	1	VT/0704
Tester, tube	Precision	10-60	1	VT/8707
Thermometer, recording	Pandux	7-day	1	VT/8706
Timer - Accutron clock	Bulova	TE-1116	1	VT/9706
Transceiver	Cadre	500	1	VT/8706
Transceiver	Cadre	510A	1	VT/8706
Transceiver	Cadre	510B	1	VT/8706
Transducer, microbaro, cans	Geotech	11057	1	VT/8706
Transducer, microbaro	Geotech	10741	1	VT/8706
Transformer	Sola	23-25-220	1	AFTAC
Transformer, variable	Sup Elec	3PN-116	1	VT/0704
Tripod, portable	G-O	18746	1	USGS(b)
Unit, devel switching	Geotech	5970	3	VT/0703
Viewer, film	Geotech	6585	2	VT/0704
Viewer, film	Geotech	6585	2	VT/9706
Winch, deep-well	Go Perf	18211-1	1	VT/0704
Winch, deep-well	Go Perf	18212-2	1	USGS(b)
Amplifier, power	Geotech	9231	1	AEC/NV00(b)
Barometer	Taylor	-	1	VT/0703
Cabinet, file, w/comb	Steelcase	-	1	VT/0704
Cleaner, vacuum	Eureka	980A	1	VT/0704
Frame, data control	Geotech	5791	3	VT/8706
Frame, data control	Geotech	5791	4	AEC/NV00(b)
Heater, automatic	Arvin	1650-watt	1	VT/0704
Module, data control	Geotech	5792A	8	AEC/NV00(b)
Module, data control	Geotech	5792B	20	VT/8706
Sheave, 24"	McKissic	477	2	USGS(b)
Supply, power, DC	Electro	EFB	1	VT/0704
Telephone, field	-	EE8B	2	AFCRL
Tester, transistor	RCA	WT-501A	1	VT/0704
Thermometer, recording	Taylor	-	1	VT/8707
Variac	Power Stat	116	1	VT/0704
Vault, tank, w/lid	-	48X48	3	VT/0703
Timing system	Geotech	19000	1	VT/0704

* These are to be Serial Nos 89S, 91S.

** This is to be Serial No 1058.

<u>Project or Organization</u>	<u>Address</u>	<u>Contract</u>
VT/0703	Geotech - A Teledyne Company ATTN: Mr. Raymond G. Reakes 3401 Shiloh Rd Garland TX 75040	F33657-70-C-0046
VT/8706	Geotech - A Teledyne Company ATTN: Mr. Jim Fix 3401 Shiloh Rd Garland TX 75040	F33657-69-C-0121
VT/8707	Geotech - A Teledyne Company ATTN: Mr. Robert Wolfe 3401 Shiloh Rd Garland TX 75040	F33657-69-C-0273
VT/0704	Tonto Forest Seismological Observatory ATTN: Mr. G. Stanfill Payson AZ 85541	F33657-70-C-0733
VT/9706	Geotech - A Teledyne Company Seismic Data Laboratory ATTN: Mr. Royal Hartenberger 300 N Washington St Alexandria VA 22314	F33657-69-C-0913
T/0102	ESSA Receiving Activity Bldg 54 Geoacoustics Group R45x7 Connecticut Ave and Huma St NW Washington DC 20008	Work done by ESSA
AFTAC	FX4300 (MSgt Watson) (Contract F33657-69-C-0759 Residue) McClellan AFB CA 95652	Account FX4300
USGS (a)	US Geological Survey ATTN: Mr. Wayne Jackson 1020 O'Brien Menlo Park CA 94025	ARPA Order 1469
USGS (b)	US Geological Survey ATTN: Mr. W. Goudeaux Chevron Oil Co Rangely CO 81648	ARPA Order 1469

<u>Project or Organization</u>	<u>Address</u>	<u>Contract</u>
AFOSR (a)	Dr. Alan Ryall University of Nevada Seismological Laboratory Mackay School of Mines Reno NV 89107	Grant AFOSR-69-1820
AFOSR (b)	Commercial Attache, FY9021 US Embassy La Paz, Bolivia Mark for: Father Fernandez San Calixto Observatory	Grant AFOSR-68-1614A
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AFOSR (c)	Dr. Paul W. Pomeroy Dept of Geology and Geophysics University of Michigan Ann Arbor MI 48107	F44620-69-C-0600
AFOSR (d)	Dr. Eduard Berg Geophysical Institute University of Alaska College AK 99504	F44620-70-C-0031
AFOSR (e)	Mr. Peter Ward Columbia University Lamont-Doherty Geological Observatory Seismological Dept Palisades NY 10964	F44620-68-C-0079
AEC/NV00 (a)	ESSA/Coast and Geodetic Survey ATTN: Mr. Nick Cefaratti 3068 S Highland Las Vegas NV 89102	AT(29-2)-746
AEC/NV00 (b)	ESSA/Coast and Geodetic Survey Special Projects Party ATTN: Mr. D. Overturf 3068 S Highland Las Vegas NV 89102	AT(29-2)-746
AFCRL	Mr. John Hogan Weston Observatory Weston MA 02193	F19628-69-C-0011

Excess will be disposed of in accordance with existing Government regulations and directives.

APPENDIX 2 to TECHNICAL REPORT NO. 70-14

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Tasks:

a. Operation:

(1) Continue operation of the Uinta Basin Seismological Observatory (UBSO), normally recording data continuously.

(2) Evaluate the seismic data to determine optimum operational characteristics and make changes in the operating parameters as may be required to provide the most effective observatory possible. Addition and modification of instruments are within the scope of work. However, such instrument modifications and additions, data evaluation, and major parameter changes are subject to the prior approval of AFTAC.

(3) Conduct routine daily analysis of seismic data at the observatory and transmit daily seismic teletype reports to the Coast and Geodetic Survey, Environmental Science Services Administration, Washington Science Center, Rockville, Maryland, using the established report format and detailed instructions.

(4) Establish quality control procedures and conduct quality control, as necessary, to assure the recording of high-quality data on both magnetic tape and film. Past experience indicates that a quality control review of one magnetic tape per magnetic tape recorder at the observatory during each week is satisfactory unless quality control tolerances have been exceeded and the necessity of additional quality control arises. Quality control of magnetic tape should include, but need not necessarily be limited to, the following items:

- (a) Completeness and accuracy of operation logs.
- (b) Accuracy of observatory measurements of system noise and equivalent ground motion.
- (c) Quality and completeness of voice comments.
- (d) Examination of all calibrations to assure that clipping does not occur.
- (e) Determination of relative phase shift on all array seismographs.
- (f) Measurement of DC unbalance.
- (g) Presence and accuracy of tape calibration and alignment.
- (h) Check of uncompensated noise on each channel.
- (i) Check of uncompensated signal-to-noise of channel 7.

Atch 1

REPRODUCTION

(j) Check of general strength and quality of timing data derived from National Bureau of Standards Station WWV.

(k) Check of time pulse modulated 60 cps on channel 14 for adequate signal level and for presence of time pulses.

(l) Check of synchronization of digital time encoder with WWV.

(5) Provide observatory facilities, accompanying technical assistance by observatory personnel, and seismological data to requesting organizations and individuals after approval by the project officer.

(6) Maintain, repair, protect, and preserve the facilities of UBSO in good physical condition in accordance with sound industrial practice.

b. Special Investigations:

(1) Conduct research investigations as approved or requested by the project officer to obtain fundamental information which will lead to improvements in the detection capability of UBSO. These programs should take advantage of geological, meteorological, and seismological conditions of the observatory. The following special studies should be accomplished:

(a) Evaluate the long-period array.

(b) Evaluate the digital data transmission and acquisition system.

(c) Continue evaluation of deep-well vertical arrays.

(2) Prior to commencing any research investigation, AFTAC approval of the proposed investigation and of a comprehensive program outline of the intended research must be obtained.

Unclassified

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DOCUMENT CONTROL DATA - R & D

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11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Advanced Research Projects Agency Nuclear Test Detection Office Washington, D. C. 20333	
13. ABSTRACT This report describes the close-out operations of the Uinta Basin Seismological Observatory (UBSO) from 1 January through 31 March 1970.			